



Oregon

Kate Brown, Governor

Water Resources Department

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December 19, 2016

Stu Spence, Parks Director
City of La Grande
P.O. Box 670
La Grande, OR 97850

Re: Morgan Lake (M-64) – Inspection Summary

I inspected this dam on August 16th, 2016, with State Engineer Keith Mills. The Water Resources Department conducts routine inspections of the dam's exterior surfaces to identify conditions that might affect the safety of the dam. Dams are assigned a hazard rating based on downstream hazard to people and property, not on the condition of the dam. The department has classified Morgan Lake dam as a high hazard dam and therefore it is inspected annually.

Summary: The dam is reasonably well maintained and operated. No new dam safety issues were identified. The results of this inspection are illustrated and described in the following photos and text. This inspection includes recommendations to keep the dam safe and functional.

Results of Inspection:



Upstream face indicating current and minimum freeboard has been adequate



Well maintained grass cover on the downstream face of the dam



Large pine recently removed from the toe of the dam

The reservoir level was 6.6 feet below the dam crest when inspected. Minimum freeboard was 4.2 feet, which is adequate. The pine tree near the toe of the dam has been removed and the dam has a well maintained cover of grass. The grass cover on the dam effectively reduces surface erosion and provides very little cover for burrowing animals. However, there was minor vegetation on the upstream face of the dam. Although this vegetation has not yet become a dam safety issue, regular clearing will prevent these dam safety issues from becoming more serious in the near future.



Animal activity on the upstream face of the dam

In addition, there was animal activity observed on both the upstream and downstream slope of the dam on both the main and auxiliary dams. Burrowing animals create holes in the dam that can compromise the structural integrity of the dam or increase settlement of the embankment. When the embankment settles, low spots can be left on the crest of the dam which reduce the amount of freeboard and increase the potential for overtopping of the dam. In the case of Morgan Lake dam, the current animal activity is from small burrowing animals and is not causing a serious dam safety issue at this time. However, the activity should be monitored. In 2001, burrowing marmots triggered a leak in the auxiliary dam, so if these animals return, action will be needed.



Location of low level conduit controls partially buried

The upstream end of the low level outlet conduit is submerged and the downstream end is buried. As a result, we were unable to inspect the condition of the outlet conduit. Very little is known regarding the condition of the conduit. It is possible that the reservoir side is open, so that the conduit through the dam is pressurized. Additional investigation of this pipe has been warranted for some time, as prior attempts could not locate the inlet in the lake. The outlet is currently not operable. Consequently, there is no way to drain the reservoir in the event of an emergency. A properly working outlet conduit is a key safety feature of a dam.



Area of seepage off of the dam near the toe

There has been no sign of seepage on the auxiliary dam since the repairs in 2011. However, there is an area of minor seepage just off of the main dam near the toe at the location of the buried outlet pipe. The source of the seepage is either from underneath the dam or from a leak in the buried outlet conduit. We are unable to determine the source at this time because the conduit is buried.

Seepage due to a leak in the outlet conduit represents a much more serious dam safety concern than seepage that occurs underneath the dam. Seepage related to the conduit can occur either through the conduit, if it has deteriorated, or along the outside of the conduit. In either case, seepage can lead to internal erosion which can eventually lead to catastrophic dam failure if left unchecked.



Emergency spillway



Concrete control section of the emergency spillway

This concrete control should remain the highest point in the spillway. The gravel road is to be graded to this level. As long as it is maintained this way, there should be no risk of overtopping in any potential flood event.

Several years ago you and I had a discussion with Anderson Perry Consultants regarding a plan to divert any possible breach flow away from the City of La Grande. The consensus was that a berm should be constructed that diverted flow toward Sheep Creek. At the time of this inspection, the berm has not yet been constructed.

Recommendation(s):

1. Monitor the downstream face of the dam for any change in seepage.
2. Begin planning for construction of a diversion berm to divert potential breach flow towards Sheep Creek and away from LaGrande as per prior recommendations and on site discussions with the City and Howard Perry from Anderson Perry Consulting.
3. Clear the minor amount of vegetation on the upstream face of the dam

We use a standard inspection form, and a copy of the field inspection sheet for this dam is attached. Thanks again for meeting with us. I plan on another routine inspection next year. Please let me know if you have any questions about this inspection. I look forward to future inspections of this dam.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Tony Janicek', with a stylized flourish at the end.

Tony Janicek, Ph.D., P.E.
Dam Safety Program Coordinator
(503) 986-0839

C: Keith Mills, State Engineer
Shad Hattan, Watermaster District 6
Dam Safety File M-64

IV. Conduit	Control: <input checked="" type="checkbox"/> Manual <input type="checkbox"/> Power <input type="checkbox"/> Other <input type="checkbox"/> Conduit Control missing		Rating
Inlet	<input checked="" type="checkbox"/> Submerged <input type="checkbox"/> Debris on Trash Rack <input type="checkbox"/> Deterioration		—
Trickle tube	<input type="checkbox"/> None <input checked="" type="checkbox"/> Screened <input type="checkbox"/> Blockage <input type="checkbox"/> Deterioration		4
Control/Stem	<input type="checkbox"/> Operable <input checked="" type="checkbox"/> Damaged <input type="checkbox"/> Missing		—
Valve(s) cycling	<input checked="" type="checkbox"/> Frozen <input type="checkbox"/> unknown <input type="checkbox"/> past year <input type="checkbox"/> frequent <i>NOT OPERABLE</i>		—
Size:	Material	Condition	
Outlet Structure	<input checked="" type="checkbox"/> Overgrown <input type="checkbox"/> Clean <input type="checkbox"/> Pressurized <input type="checkbox"/> Leaking _____ gpm		—
Secondary outlet	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Type <i>TRISCULE TUBES</i> Diameter _____ in.		4
Comments:			

V. Spillway	<input checked="" type="checkbox"/> Earth <input type="checkbox"/> Rock <input type="checkbox"/> Concrete <input type="checkbox"/> Other		Rating
Modifications	<input checked="" type="checkbox"/> None <input type="checkbox"/> Reduction in capacity <input type="checkbox"/> Feature not on design		—
Approach Channel	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Trees/brush <input type="checkbox"/> debris <input type="checkbox"/> erosion		4
Control Section	Width _____ Depth _____ <input type="checkbox"/> Concrete <input type="checkbox"/> Rock <input type="checkbox"/> Soil <input type="checkbox"/> Culvert <input type="checkbox"/> Unstable		
Flashboards/Gate	<input checked="" type="checkbox"/> None <input type="checkbox"/> In place <input type="checkbox"/> operational <input type="checkbox"/> deteriorated		—
Discharge Channel	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Trees/brush <input type="checkbox"/> leakage <input type="checkbox"/> headcutting (_____ feet approaching control section, depth _____ feet.)		4
Stilling basin	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Functional <input type="checkbox"/> Minor Erosion <input type="checkbox"/> Severe Erosion/Undercutting		—
Aux. Spillway	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (use comments below)		—
Comments:	<i>WEL ~ 2' BELOW SPILLWAY CONTROL SECTION</i>		

VI. Access and Security			Rating
Vehicle access	<input checked="" type="checkbox"/> Public road <input type="checkbox"/> all weather road <input type="checkbox"/> dirt road <input type="checkbox"/> cross country		4
Fencing, signage	<input type="checkbox"/> Remote <input type="checkbox"/> Gate <input type="checkbox"/> Secure Fence <input type="checkbox"/> Camera <input checked="" type="checkbox"/> Uncontrolled		—
New Structure below dam	Dwelling _____ feet Paved public road _____ feet Other sig building _____ feet		—
Emergency Action Plan	<input type="checkbox"/> Not required <input checked="" type="checkbox"/> Completed _____ at dam (dated _____) <input type="checkbox"/> None		4
Comments:			

Instrumentation data reviewed: ☐ N/A ☐ Yes ☐ No

Other:
